IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Inventor:	Raoul Florent		
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Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

November 24, 2008

APPEAL BRIEF

Dear Sir:

Attached herewith is an Appeal Brief pursuant to 35 U.S.C. §134 and 37 C.F.R. §41.37 for the above-identified patent application in support of a Notice of Appeal filed with the United States Patent and Trademark Office on October 9, 2008.

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I. REAL PARTY IN INTEREST

The real party in interest in the above-entitled application is Koninklijke Philips Electronics N.V., Eindhoven, NL.

II. RELATED APPEALS AND INTERFERENCES

The undersigned attorney/agent, the appellant, and the assignee are not aware of any related appeals or interferences that would directly affect, or be directly affected by, or have a bearing on the Board's decision in this pending appeal.

III. STATUS OF THE CLAIMS

Claims 1-20 are pending and are all on appeal. Claims 1-20 stand rejected.

IV. STATUS OF AMENDMENTS

After final amendments have been submitted for claims 1 and 15-20. These amendments have been entered for the purpose of appeal.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1

Claim 1 is directed towards an imaging processing system for reduction of the noise and enhancement of edges in images of a sequence, which comprises a decomposer 10 that decomposes a spatial image signal yielding slices of different content, with the decomposition based on pyramidal decomposition (page 4, lines 26-27; page 5, lines 24-26). The system also comprises a filter 20 that temporally filters one or more of the slices for differently filtering the slices according to the content, where one or more high frequency slices are filtered at greater rate than one or more low frequency slices (page 4, lines 29-31; page 6, lines 5-7; page 6, lines 9-11). Lastly, the system comprises a recomposer 30 that recomposes the images of the sequence from at least the temporally filtered slices (page 5, lines 4-5; page 6, lines 13-15).

Claim 7

Claim 7 is directed towards a computer readable storage medium which comprises computer instructions for decomposing a spatial image signal yielding slices of different content, the decomposition being based on pyramidal decomposition (page 4, lines 26-27; page 5, lines 24-26); for temporally filtering one or more of the slices for differently filtering the slices according to the content, where one or more high frequency slices are filtered at a greater rate than one or more low frequency slices (page 4, lines 29-31; page 6, lines 5-7; page 6, lines 9-11); and for recomposing the images of the sequence from at least the temporally filtered slices (page 5, lines 4-5; page 6, lines 13-15).

Claim 8

Claim 8 is directed towards a method of imaging which comprises decomposing a spatial image signal yielding slices of different content (page 5, lines 15-16; page 6, lines 17-19), with the decomposition being based on pyramidal decomposition (page 5, lines 24-26). The method also comprises temporally filtering at least a portion of the slices for differently filtering the slices according to the content, where one or more high frequency slices are filtered at a greater rate than one or more low frequency slices (page 4, lines 29-31; page 6, lines 5-7; page 6, lines 9-11). The method additionally comprises recomposing the images of the sequence from the temporally filtered slices and one or more unfiltered slices (page 5, lines 4-5; page 6, lines 13-15).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-3, 5-8 and 10-19 are unpatentable under 35 U.S.C. §103 over Zlokolica et al. (Video denoising using multiple class averaging with multiresolution) in view of Griessl et al. (US 6,370,196).

Whether claims 4, 9 and 20 are unpatentable under 35 U.S.C. §103 over Zlokolica et al. (Video denoising using multiple class averaging with multiresolution), in view of Griessl et al. (US 6,370,196) and further in view of Brailean et al. (Noise Reduction: Filters for Dynamic Image Sequence: a Review).

VII. ARGUMENTS

A. Rejection of Claims 1-3, 5-8 and 10-19 Under 35 U.S.C. §103

Claims 1-3, 5-8 and 10-19 are rejected as being unpatentable under 35 U.S.C. §103(a) over Zlokolica et al. in view of Griessl et al. This rejection should be withdrawn because the combination of Zlokolica et al. and Griessl et al. does not establish a *prima facie* case of obviousness with respect to the subject claims.

> The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___ (2007). MPEP §2143.

Background

Griessl et al. discloses a system for estimating motion fields within images containing moving shapes. The motion estimation system 100 receives an input image, a shape, a target position for the image and the shape, and a hypothesis motion field. Preliminary motion fields within the images are found based on these inputs. Those fields that yield the best local motion predictions are combined to create a final motion field.

Claim 1

Independent claim 1 recites an image processing system for reduction of the noise and enhancement of edges in images of a sequence, comprising, *inter alia*: a filter that temporally filters one or more of the slices for differently filtering the slices according to the content, wherein one or more high frequency slices are filtered at a greater rate than one or more low frequency slices. The combination of Zlokolica et al. and Griessl et al. fail to teach or suggest this element.

In the Final Office Action the Office conceded that Zlokolica et al. failed to teach differently filtering the slices according to the content wherein one or more high frequency slices are filtered at a greater rate than one or more low frequency slices, but asserted Griessl

et al. as making up this deficiency. In Griessl et al., motion estimation is accomplished by reducing the input image 109 by applying a filter module 102 and a subsample module 103 until the coarsest resolution level is reached (see column 6, lines 14-16). At the coarsest level, the hypothesis values are used and a motion field is estimated, propagated and expanded to the next finer resolution level (see column 6, lines 14-24).

Griessl et al. fails to teach or suggest the subject claim element because the filter 102 and subsample 103 modules, which the Office cites as teaching the claimed filter, do not filter one or more high frequency slices at a greater rate than one or more low frequency slices as recited in claim 1. Rather, Griessl et al. discloses applying a "typical reduce operation…to all input data with respect to shape information, wherein the different types of fields, i.e. resolution levels [of an image], may be treated differently" (see column 6, lines 36-40). In Griessl et al., an image is not broken down into slices, let alone high and low frequency slices, and the filtering modules are applied only to resolution levels within a single image. Thus, Griessl et al. fails to teach a filter that temporally filters one or more high frequency slices at a greater rate than one or more low frequency slices as recited in claim 1. Therefore, the combination of Zlokolica et al. and Griessl et al. fails to teach or suggest all of the elements of claim 1, and the rejection of claim 1 should be reversed.

Claims 7 and 8

Claims 7 and 8 are a computer readable storage medium claim and a method claim which recite aspects similar to those recited in claim 1. As such, the arguments made previously with regards to claim 1 apply mutatis mutandis to claims 7 and 8. Hence, the rejection of claims 7 and 8 should be reversed.

Claims 2-3, 5-6 and 10-19

Claims 2-3, 5-6 and 10-19 all depend from claims 1, 7 and 8, respectively, and are allowable at least by virtue of their dependencies. Therefore, the rejection of claims 2-3, 5-6 and 10-19 should be reversed.

B. Rejection of Claim 4, 9 and 20 Under 35 U.S.C. §103

Claims 4, 9 and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Zlokolica et al., in view of Griessl et al. and further in view of Brailean et al. Claims 4, 9 and 20 depend from claims 1, 7 and 8 and are allowable at least by virtue of their dependencies. Therefore, the rejection of claims 4, 9 and 20 should be withdrawn.

VIII. CONCLUSION

In view of the foregoing, it is submitted that claims 1-20 are distinguished patentably and non-obviously over the prior art of record, and reversal of the rejection of claims 1-20 is respectfully requested.

Respectfully submitted,

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IX. CLAIM APPENDIX

1. An image processing system for reduction of noise and enhancement of edges in images of a sequence, comprising:

a decomposer that decomposes a spatial image signal yielding slices of different content, the decomposition being based on pyramidal decomposition;

a filter that temporally filters one or more of the slices for differently filtering the slices according to the content, wherein one or more high frequency slices are filtered at a greater rate than one or more low frequency slices; and

a recomposer that recomposes the images of the sequence from at least the temporally filtered slices.

2. The system of claim 1, wherein the pyramidal decomposition is one of Laplacian or Gaussian decomposition.

3. The system of claim 1, wherein the temporal filtering comprises adaptive filtering.

4. The system of claim 1, wherein the temporal filtering comprises motion compensation.

5. The system of claim 1, wherein the temporal filtering comprises recursive adaptive filtering.

6. The system of claim 1, further comprising a display device for displaying the images of the sequence.

7. A computer-readable storage medium, comprising computer instructions for:

decomposing a spatial image signal yielding slices of different content, the decomposition being based on pyramidal decomposition;

temporally filtering one or more of the slices for differently filtering the slices according to the content, wherein one or more high frequency slices are filtered at a greater rate than one or more low frequency slices; and

recomposing the images of the sequence from at least the temporally filtered slices.

8. A method of imaging comprising:

decomposing a spatial image signal yielding slices of different content, the decomposition being based on pyramidal decomposition;

temporally filtering at least a portion of the slices for differently filtering the slices according to the content, wherein one or more high frequency slices are filtered at a greater rate than one or more low frequency slices; and

recomposing the images of the sequence from the temporally filtered slices and one or more unfiltered slices.

9. The method of claim 8, wherein the temporal filtering comprises motion compensation.

10. The method of claim 8, further comprising applying Laplacian pyramid decomposition to perform the decomposition of the spatial image signal.

11. The method of claim 8, further comprising applying Gaussian pyramid decomposition to perform the decomposition of the spatial image signal.

12. The method of claim 8, further comprising applying adaptive temporal recursive filtering to perform the temporal filtering of the at least a portion of the slices.

13. The method of claim 8, wherein the temporal filtering comprises adaptive filtering.

14. The method of claim 8, further comprising displaying the recomposed images of the sequence.

15. The computer readable storage medium of claim 7, further comprising computer instructions for applying Laplacian pyramid decomposition to perform the decomposition of the spatial image signal.

16. The computer readable storage medium of claim 7, further comprising computer instructions for applying Gaussian pyramid decomposition to perform the decomposition of the spatial image signal.

17. The computer readable storage medium of claim 7, further comprising computer instructions for applying adaptive temporal recursive filtering to perform the temporal filtering of the at least a portion of the slices.

18. The computer readable storage medium of claim 7, wherein the temporal filtering comprises adaptive filtering.

19. The computer readable storage medium of claim 7, further comprising computer instructions for displaying the recomposed images of the sequence.

20. The computer readable storage medium of claim 7, wherein the temporal filtering comprises motion compensation.

X. EVIDENCE APPENDIX

None.

XI. RELATED PROCEEDINGS APPENDIX

None known to undersigned attorney/agent.